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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,556	04/12/2004	Masashi Enomoto	S1459.70088US00	2616

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EXAMINER	
MOWLA, GOLAM	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
06/22/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/822,556	ENOMOTO ET AL.	
	Examiner	Art Unit	
	GOLAM MOWLA	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05/18/2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment of 05/18/2009 does not place the Application in condition for allowance.

2. Claims 1-39 are pending. Applicant has amended claims 1, 9-14, 17-18 and 22-26.

3. The amendment filed on 05/18/2009 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "the metal oxide being non-porous and less than 100 nm in thickness" in line 9 of claim 1, in lines 8-9 of claim 9, in lines 8-9 of claim 10, in line 8 of claim 11, in line 8 of claim 12, in lines 7-8 of claim 13, in lines 17-18 of claim 14, in lines 17-18 of claim 22, in lines 17-18 of claim 23, in lines 15-16 of claim 24, in lines 15-16 of claim 25, and in lines 15-16 of claim 26. Applicant is required to cancel the new matter in the reply to this Office Action.

Status of the Objections or Rejections

4. Due to Applicant's amendment of claims 1, 9-14, 19, 22-26 and 29-31, all rejections from the office Action mailed on 02/18/2009 are withdrawn. However, upon further consideration, a new ground of rejection is presented below.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The original disclosure as filed does not provide support for "the metal oxide being non-porous and less than 100 nm in thickness" as recited in line 9 of claim 1, in lines 8-9 of claim 9, in lines 8-9 of claim 10, in line 8 of claim 11, in line 8 of claim 12, in lines 7-8 of claim 13, in lines 17-18 of claim 14, in lines 17-18 of claim 22, in lines 17-18 of claim 23, in lines 15-16 of claim 24, in lines 15-16 of claim 25, and in lines 15-16 of claim 26. The pertinent portions of the specification of the instant application that talks about the metal film are [0036], [0105], [0108], [0110], [0111], [0116], [0120], [0121] and [0140] (refer to publication of instant application), and none of these portions specifically mention whether the metal film is non-porous, and also silent as to whether the film thickness is less than 100 nm. In paragraphs [0110] and [0140], Applicant mentions that the film thickness is 40 nm, however, it still does not provide a range for the film thickness.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chittibabu et al. (US 2003/0056821 A1) in view of Loeb (US 5312439), and further in view of Meinhardt et al. ("Optoelectronic Device made from Multilayer and Molecularly Doped Organic Layers," 01/1999). Supporting evidence is provided by the chemical structure provided by "Laboratory for Surface Physics and Chemistry" (accessed from http://www.ifm.liu.se/surfphys/pedot-pss.html on 08/21/2008).

Regarding claims 1, 2, 10 and 12, Chittibabu teaches a fabrication method of a photoelectric conversion device (photovoltaic cell 30) or an electronic apparatus or a metal film (fig. 2 and [0029-0062]) comprising a semiconductor electrode (dye-sensitized semiconductor layer 36) and a metal film (catalyst layer 40 comprising platinum, [0056]) with a thickness less than 100 nm (2 to about 10 nm, [0056]) to be an opposite electrode formed on a metal oxide film (transparent and conductive coating of substrate 34, [0032] and [0055-0056]).

However the reference is silent as to whether the metal film electrode (catalyst layer 40 comprising platinum, [0056]) is non-porous.

Loeb teaches a method wherein porous or non-porous platinum is utilized as an electrode (col. 6, lines 2-10) in an implantable device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the non-porous platinum film of Loeb as the electrode in the method of Chittibabu because selection of a known material (in this case porous or non-porous material) based on its suitability for its intended use supported a prima

facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP § 2144.07.

The references are also silent as to whether the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 1 or 3 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 2 or 4, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the metal oxide film, the metal oxide film directly contacting the intermediate film, and forming the metal film on the intermediate film, the metal film directly contacting the intermediate film:

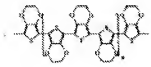
Meinhardt teaches a method of making an optoelectronic device (see title and abstract) wherein the In-Sn oxide film (ITO-electrode; see fig. 2 on page 48) is coated with PEDOT doped with PSS (See 2nd paragraph on page 48) to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability (See 2nd paragraph on page 48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have coated the metal oxide film (transparent and conducting coating of ITO coating of substrate 34) of Chittibabu which is also made of In-Sn oxide ([0055]) with the conducting polymer PEDOT:PSS of Meinhardt to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability, as shown by Meinhardt.

PEDOT doped with PSS has the structure of instant claimed formulae (see chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and also fig. 1 of Meinhardt et al on page 47).

Chittibabu as modified by Meinhardt teaches that the intermediate layer (PEDOT:PSS layer) is formed on the metal oxide film (transparent and conducting coating of ITO coating of substrate 34), the metal oxide film (transparent and conducting coating of ITO coating of substrate 34) directly contacting the intermediate film (PEDOT:PSS layer), and forming the metal film (40) on the intermediate film (PEDOT:PSS layer of Meinhardt), the metal film (40) directly contacting the intermediate film (PEDOT:PSS layer).

Regarding claim 3, Chittibabu as modified by Meinhardt further teaches that the intermediate film (PEDOT:PSS layer of Meinhardt) is formed by using an aqueous solution containing polyethylene dioxythiophene defined by the following Formula 5, polystyrenesulfonic acid ion defined by the following Formula 6, and polystyrenesulfonic acid defined by the following Formula 7. PEDOT doped with PSS is commercially available in an aqueous suspension as evidence given by Meinhardt, chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and Starck GmbH (http://server2.idtechex.com/products/en/presentation.asp?presentationid=646 accessed 1/31/2008) defined by the following Formula 1, polystyrenesulfonic acid ion defined by the following Formula 2, and polystyrenesulfonic acid defined by the following also Formula 3 as shown in Figure 1 of,



Formula 1

Formula 2

Formula 3

Regarding claim 4, Chittibabu further discloses that the metal oxide film (transparent and conducting coating of ITO coating of substrate 34) is made of In-Sn oxide ([0055]).

Regarding claims 5 and 6, Chittibabu further discloses that the metal film (40) is a monolayer film (see fig. 2) and is made of platinum ([0056]).

Regarding claim 7, Chittibabu further discloses that the semiconductor electrode (136) is composed of semiconductor fine particles, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximate 1 nm to approximately 200 nm ([0034]).

Regarding claim 8, Chittibabu further discloses that the photoelectric conversion device is a wet type solar cell ([0050]).

Regarding claims 9, 11 and 13, Chittibabu teaches a photoelectric conversion device or an electronic apparatus or a layer structure (photovoltaic cell 30) (fig. 2 and [0029-0062]) comprising a semiconductor electrode (dye-sensitized semiconductor layer 36) and a metal film (catalyst layer 40 comprising platinum, [0056]) with a thickness less than 100 nm (2 to about 10 nm, [0056]) to be an opposite electrode formed on a metal oxide film (transparent and conductive coating of substrate 34, [0032] and [0055-0056]).

However the reference is silent as to whether the metal film electrode (catalyst layer 40 comprising platinum, [0056]) is non-porous.

Loeb teaches an implantable device wherein a porous or non-porous platinum film is utilized as an electrode (col. 6, lines 2-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the non-porous platinum film of Loeb as the electrode in the photoelectric conversion device of Chittibabu because selection of a known material (in this case porous or non-porous material) based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP § 2144.07.

The references are also silent as to an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 8 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 9, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the metal oxide film, the metal oxide film directly contacting the intermediate film, and forming the metal film on the intermediate film, the metal film directly contacting the intermediate film.

Meinhardt teaches an optoelectronic device (see title and abstract) wherein the In-Sn oxide film (ITO-electrode; see fig. 2 on page 48) is coated with PEDOT doped with PSS (See 2nd paragraph on page 48) to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability (See 2nd paragraph on page 48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have coated the metal oxide film (transparent and conducting coating of ITO coating of substrate 34) of Chittibabu which is also made of In-Sn oxide ([0055]) with the conducting polymer PEDOT:PSS of Meinhardt to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability, as shown by Meinhardt.

PEDOT doped with PSS has the structure of instant claimed formulae (see chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and also fig. 1 of Meinhardt et al on page 47).

Chittibabu as modified by Meinhardt teaches that the intermediate layer (PEDOT:PSS layer) is formed on the metal oxide film (transparent and conducting coating of ITO coating of substrate 34), the metal oxide film (transparent and conducting coating of ITO coating of substrate 34) directly contacting the intermediate film (PEDOT:PSS layer), and the metal film (40) directly contacting the intermediate film (PEDOT:PSS layer).

Regarding claims 14-15, 23 and 25, Chittibabu teaches a fabrication method of a photoelectric conversion device (photovoltaic cell 30) (fig. 2 and [0029-0062]) or an electronic apparatus or a semiconductor fine particle layer comprising a semiconductor electrode (dye-sensitized semiconductor layer 36) composed of semiconductor fine particles ([0034]) on a first metal oxide film (transparent and conductive ITO coating of substrate 32, [0032]), the semiconductor fine particles having an average particle diameter of primary particles ranging between approximate 1 nm to approximately 200

nm ([0034]); and forming an opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) associated with the semiconductor electrode (36), the opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) having a second oxide film (ITO, [0055]), and forming a metal film (catalyst layer 40) with a thickness of less than 100 nm ([0056]) as a part of the opposite electrode.

However the reference is silent as to whether the metal film electrode (catalyst layer 40 comprising platinum, [0056]) is non-porous.

Loeb teaches a method wherein porous or non-porous platinum is utilized as an electrode (col. 6, lines 2-10) in an implantable device.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the non-porous platinum film of Loeb as the electrode in the method of Chittibabu because selection of a known material (in this case porous or non-porous material) based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP § 2144.07.

The references are also silent as to whether the method includes steps of forming a first intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 18/20/27/31 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 19/21/28/32, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the first metal oxide film and forming the semiconductor electrode on the first intermediate film, the semiconductor electrode directly contacting

the first intermediate film. The reference is also silent as to whether the opposite electrode (12) further comprises a second intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 18 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 19, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the second metal oxide film, the second intermediate film directly contacting the second metal oxide film, and the second intermediate film directly contacting a metal film.

Meinhardt teaches a method of making an optoelectronic device (see title and abstract) wherein the In-Sn oxide film (ITO-electrode; see fig. 2 on page 48) is coated with PEDOT doped with PSS (See 2nd paragraph on page 48) to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability (See 2nd paragraph on page 48).

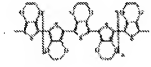
It would have been obvious to one of ordinary skill in the art at the time of the invention to have coated the first (transparent and conductive ITO coating of substrate 32, [0032]) and second (transparent and conductive ITO coating of substrate 34, [0054-0055]) metal oxide films of Chittibabu which are also made of In-Sn oxide ([0032] and [0055]) with the conducting polymer PEDOT:PSS of Meinhardt to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability, as shown by Meinhardt.

PEDOT doped with PSS has the structure of instant claimed formulae (see chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and also fig. 1 of Meinhardt et al. on page 47).

Chittibabu as modified by Meinhardt further shows that the first intermediate layer (PEDOT:PSS layer) is formed on the first metal oxide film (transparent and conductive ITO coating of substrate 32 of Chittibabu which is doped with PEDOT:PSS layer of Meinhardt) and forming the semiconductor electrode (36) on the first intermediate film (PEDOT:PSS layer of Meinhardt), the semiconductor electrode (36) directly contacting the first intermediate film (PEDOT:PSS layer); and the opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) having a second intermediate film (PEDOT:PSS layer of Meinhardt as transparent and conductive ITO coating of substrate 34 of Chittibabu is doped with PEDOT:PSS layer of Meinhardt) satisfying formulae 18 and 19, the second intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) formed on the second metal oxide film (transparent and conductive ITO coating of substrate 34 of Chittibabu), the second intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) directly contacting the second metal oxide (transparent and conductive ITO coating of substrate 34 of Chittibabu), and the second intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) directly contacting a metal film (40) (see fig. 2).

Regarding claim 16, Chittibabu as modified by Meinhardt further teaches that the intermediate film is formed by using an aqueous solution containing polyethylene

dioxythiophene defined by the following Formula 22, polystyrenesulfonic acid ion defined by the following Formula 23, and polystyrenesulfonic acid defined by the following Formula 23. PEDOT doped with PSS is commercially available in an aqueous suspension as evidence given by Meinhardt, chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and Starck GmbH (http://server2.idtechex.com/products/en/presentation.asp?presentationid=646 accessed 1/31/2008) defined by the following Formula 1, polystyrenesulfonic acid ion defined by the following Formula 2, and polystyrenesulfonic acid defined by the following also Formula 3 as shown in Figure 1 of ,



Formula 1

Formula 2

Formula 3

Regarding claim 17, Chittibabu further discloses that the first metal oxide film is made of In-Sn oxide ([0032]).

Regarding claim 18, Chittibabu further discloses the metal oxide film is formed on a transparent plastic substrate ([0031]).

Regarding claim 19, Chittibabu further discloses the semiconductor electrode (36) is formed by using a strongly acidic semiconductor fine particle dispersion ([034]).

Regarding claim 20, Chittibabu further discloses that the semiconductor electrode (36) is formed at a temperature in the range of 50^{O}C to 450^{O}C (see examples). The claimed temperature range of 100^{O}C to 140^{O}C overlap with the disclosed temperature range, and in the case where the claimed ranges "overlap of lie

inside ranges disclosed by the prior art" a prima facie case of obviousness exists (MPEP § 2144.05, In re Wertheim).

Regarding claim 21, Chittibabu further discloses that the photoelectric conversion device is a wet type solar cell ([0050]).

Regarding claims 22, 24 and 26, Chittibabu teaches a photoelectric conversion device (photovoltaic cell 30) (fig. 2 and [0029-0062]) or an electronic apparatus or a semiconductor fine particle layer comprising a semiconductor electrode (dye-sensitized semiconductor layer 36) composed of semiconductor fine particles ([0034]) on a first metal oxide film (transparent and conductive ITO coating of substrate 32, [0032]), the semiconductor fine particles having an average particle diameter of primary particles ranging between approximate 1 nm to approximately 200 nm ([0034]); and an opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) associated with the semiconductor electrode (36), the opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) having a second oxide film (ITO, [0055]), and a metal film (catalyst layer 40) with a thickness of less than 100 nm ([0056]) as a part of the opposite electrode.

Loeb teaches an implantable device wherein a porous or non-porous platinum film is utilized as an electrode (col. 6, lines 2-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used the non-porous platinum film of Loeb as the electrode in the photoelectric conversion device of Chittibabu because selection of a known material (in this case porous or non-porous material) based on its suitability for its

intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP § 2144.07.

The references are silent as to whether the method includes steps of forming a first intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 25/29/33 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 26/30/34, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the first metal oxide film and forming the semiconductor electrode on the first intermediate film, the semiconductor electrode directly contacting the first intermediate film. The reference is also silent as to whether the opposite electrode (12) further comprises a second intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 18 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 19, RSO_3H (R=an alkyl, an aryl or an alkoxy), $R'OSO_3H$ (R' = H, an alkyl, an aryl or an alkoxy), HCl, $HClO_4$, HPF_6, HBF_4, and HI_5 on the second metal oxide film, the second intermediate film directly contacting the second metal oxide film, and the second intermediate film directly contacting the metal film.

Meinhardt teaches an optoelectronic device (see title and abstract) wherein the In-Sn oxide film (ITO-electrode; see fig. 2 on page 48) is coated with PEDOT doped with PSS (See 2nd paragraph on page 48) to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability (See 2nd paragraph on page 48).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have coated the first (transparent and conductive ITO coating of substrate 32, [0032]) and second (transparent and conductive ITO coating of substrate 34, [0054-0055]) metal oxide films of Chittibabu which are also made of In-Sn oxide ([0032] and [0055]) with the conducting polymer PEDOT:PSS of Meinhardt to allow for high transmission in the visible spectral region, low sheet-resistance, good thermal stability and UV-stability, as shown by Meinhardt.

PEDOT doped with PSS has the structure of instant claimed formulae (see chemical structure of PEDOT/PSS provided by "Laboratory for Surface Physics and Chemistry", and also fig. 1 of Meinhardt et al. on page 47).

Chittibabu as modified by Meinhardt further shows that the first intermediate layer (PEDOT:PSS layer) is formed on the first metal oxide film (transparent and conductive ITO coating of substrate 32 of Chittibabu which is doped with PEDOT:PSS layer of Meinhardt) and forming the semiconductor electrode (36) on the first intermediate film (PEDOT:PSS layer of Meinhardt), the semiconductor electrode (36) directly contacting the first intermediate film (PEDOT:PSS layer); and the opposite electrode (transparent and conductive ITO coating of substrate 34, [0054-0055]) having a second intermediate film (PEDOT:PSS layer of Meinhardt as transparent and conductive ITO coating of substrate 34 of Chittibabu is doped with PEDOT:PSS layer of Meinhardt) satisfying formulae 18 and 19, the second intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) formed on the second metal oxide film (transparent and conductive ITO coating of substrate 34 of Chittibabu), the second

intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) directly contacting the second metal oxide (transparent and conductive ITO coating of substrate 34 of Chittibabu), and the second intermediate film (PEDOT:PSS layer of transparent and conductive ITO coating of substrate 34 of Chittibabu) directly contacting a metal film (40) (see fig. 2).

Regarding claims 27, 29 and 31, Chittibabu further discloses injecting an electrolytic layer (polyelectrolyte layer 38) ([0050]) between the metal film (40) and a semiconductor fine particle layer (36) (fig. 2).

Regarding claims 28 and 30, Chittibabu further discloses injecting an electrolytic layer (polyelectrolyte layer 38) ([0050]) between the metal film (11) and a semiconductor fine particle layer (14) (fig. 2A.

Regarding claims 32-36, the references are silent as to whether the layers are formed separately. However, selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946). See also MPEP §2144.04 IVC.

Response to Arguments

9. Applicant's arguments with respect to claims 1-36 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the amendments.

Applicant argues that none of the applied references teach or disclose the metal film being non-porous and less than 100 nm (see Remarks, page 2).

This argument is directed to the claims as amended and is moot in view of new ground of rejection as presented above.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence/Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795